



SEQUENCE LISTING



<110> BARBAS, Carlos
STEGE, Justin
GUAN, Xueni
DALMIA, Bipin

<120> METHODS AND COMPOSITIONS TO MODULATE
EXPRESSION IN PLANTS

<130> 27801-20014.20

<140> 09/765,555
<141> 2001-01-19

<150> 09/620,897
<151> 2000-07-21

<150> US 60/177,468
<151> 2000-01-21

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<223> ZFPAp3

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<223> ZFP from -85 to -65

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<223> ZFP from 294 to 317

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<210> 13
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<212> DNA
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<223> ZFPm4 from 317 to 300

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<212> DNA
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<223> Partial sequence of pMal-m1 and zinc finger
protein ZFPm1

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<212> DNA

<213> Artificial Sequence

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<223> Partial sequence of pMal-m3 and zinc finger protein ZFPm3

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<210> 17
<211> 3300
<212> DNA
<213> Artificial Sequence

<220>
<223> Partial sequence of pMal-m4 and zinc finger protein ZFPm4

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<210> 18
<211> 3300
<212> DNA
<213> Artificial Sequence

<220>
<223> Partial sequence of pMal-Ap3 and zinc finger protein ZFPAp3

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<212> DNA
<213> Artificial Sequence

<220>
<223> Oligo m12

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<210> 20
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligo m34

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ctcc 64

<210> 21
<211> 52
<212> DNA
<213> Artificial Sequence

<220>

<223> Oligo Ap3
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 <213> Artificial Sequence
 <220>
 <223> Oligo NRI-1
 <400> 22
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 <213> Artificial Sequence
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 <223> Oligo NRI-2
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 <211> 50
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 <223> Oligo hHD-I
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 <223> Oligo hHD-II
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 <223> Oligo c5p1-g
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<220>
<223> Oligo c5p3-g

<400> 27
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<210> 28
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<220>
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<400> 28
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<210> 29
<211> 50
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<213> Artificial Sequence

<220>
<223> Oligo e2c-g

<400> 29
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<210> 30
<211> 19
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<213> Artificial Sequence

<220>
<223> Primer Ap3-F

<400> 30
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<210> 31
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer NZlib5'

<400> 31
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<210> 32
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer Ap3f4-R

<400> 32
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<210> 33
<211> 21

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<212> DNA
<213> Artificial Sequence

<220>
<223> Primer m4f3

<400> 33
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<210> 34
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR probe for AP3

<400> 34
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<210> 35
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer for AP3 (forward)

<400> 35
tttggacgag cttgacattc ag 22

<210> 36
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<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer for AP3 (reverse)

<400> 36
cgcgAACGAG tttgaaagtg 20

<210> 37
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 37
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<210> 38
<211> 184
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFPm1

<400> 38
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 35 40 45
 Phe Ser Gln Arg Ala His Leu Glu Arg His Gln Arg Thr His Thr Gly
 50 55 60
 Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser
 65 70 75 80
 Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
 85 90 95
 Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val
 100 105 110
 Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
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 Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
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 <213> Artificial Sequence

<220>
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 35 40 45
 Phe Ser Gln Ser Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly
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 Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Arg Ser
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 Asp Asn Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
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 Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val
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 Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
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 Cys Gly Lys Ser Phe Ser Gln Ala Gly His Leu Ala Ser His Gln Arg
 130 135 140
 Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
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35 40 45
Phe Ser Thr Ser Gly Ser Leu Val Arg His Gln Arg Thr His Thr Gly
50 55 60
Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser
65 70 75 80
Ser Ser Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
85 90 95
Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser Ser Leu Val
100 105 110
Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
115 120 125
Cys Gly Lys Ser Phe Ser Asp Ser Arg Asp Leu Ala Arg His Gln Arg
130 135 140
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
145 150 155 160
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35 40 45
Phe Ser Gln Ser Ser Ser Leu Val Arg His Gln Arg Thr His Thr Gly
50 55 60
Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Asp Cys
65 70 75 80
Arg Asp Leu Ala Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
85 90 95
Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser Ser Leu Val
100 105 110
Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
115 120 125
Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val Arg His Gln Arg
130 135 140
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
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165 170 175
Lys Lys Thr Ser Gly Gln Ala Gly
180

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35 40 45
Phe Ser Gln Ser Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly
50 55 60
Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser
65 70 75 80
Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
85 90 95
Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Thr Ser Gly Ser Leu Val
100 105 110
Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
115 120 125
Cys Gly Lys Ser Phe Ser Gln Ser Ser His Leu Val Arg His Gln Arg
130 135 140
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
145 150 155 160
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165 170 175
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<211> 7

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1 5

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Ser Thr Ser Gly Ser Leu Val Arg

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<210> 62
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<400> 62
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<210> 63
<211> 330
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<220>
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ggtaaaaaac cgtataaaatg cccagagtgc ggcaaattttt ttagccaggc cgcccacctg 180
gcagccatc aacgcaactca tactggcgag aagccataca aatgtccaga atgtggcaag 240
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agtggccagg ccggccagct ctcctcctc 330

<210> 64
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<212> DNA
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<220>
<223> ZFP2b

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ggtaaaaaac cgtataaaatg cccagagtgc ggcaaattttt ttagccagtc cagcaacctg 180
gtgcgccatc aacgcaactca tactggcgag aagccataca aatgtccaga atgtggcaag 240
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<220>
<223> Oligonucleotide

<400> 65
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<210> 66
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<212> DNA
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<211> 81
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<220>
<223> Primer F1-f1

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aaaccgtata aatgcccaga g 81

<210> 68
<211> 87
<212> DNA
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<220>
<223> Primer F1-f2

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aatgtggta agtccttcag ccgcagc 87

<210> 69
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<212> DNA

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<213> Artificial sequence

<220>
<223> Primer F2-f

<400> 69
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gtccagaatg tggc                                74

<210> 70
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<220>
<223> Primer F2-b

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ttcacc                                66

<210> 71
<211> 58
<212> DNA
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<220>
<223> Primer F3-b1

<400> 71
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<210> 72
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<212> DNA
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<220>
<223> Primer F3-b2

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<210> 73
<211> 315
<212> DNA
<213> Artificial sequence

<220>
<223> 3 finger protein C7

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tgtcgaaatat gcatgcgtaa cttcagtcgt agtgaccacc ttaccaccca catccgcacc    180
cacacaggcg agaagcctt tgcctgtgac atttgtgggaa ggaagtttgc caggagtgt     240
gaacgcaaga ggcataccaa aatccattta agacagaagg actctagaac tagtggccag     300
gccggccagg ctage                                315

<210> 74
<211> 105
<212> PRT
<213> Artificial sequence

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<220>
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35 40 45
Ser Arg Ser Asp His Leu Thr Thr His Ile Arg Thr His Thr Gly Glu
50 55 60
Lys Pro Phe Ala Cys Asp Ile Cys Gly Arg Lys Phe Ala Arg Ser Asp
65 70 75 80
Glu Arg Lys Arg His Thr Lys Ile His Leu Arg Gln Lys Asp Ser Arg
85 90 95
Thr Ser Gly Gln Ala Gly Gln Ala Ser
100 105

<210> 75
<211> 184
<212> PRT
<213> Artificial sequence

<220>
<223> Zinc finger protein ZFPm1

<400> 75
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Cys Gly Lys Ser Phe Ser Asp Pro Gly His Leu Val Arg His Gln Arg
20 25 30
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
35 40 45
Phe Ser Gln Arg Ala His Leu Glu Arg His Gln Arg Thr His Thr Gly
50 55 60
Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser
65 70 75 80
Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
85 90 95
Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val
100 105 110
Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
115 120 125
Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val Arg His Gln Arg
130 135 140
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
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Phe Ser Gln Ala Gly His Leu Ala Ser His Gln Arg Thr His Thr Gly
165 170 175
Lys Lys Thr Ser Gly Gln Ala Gly
180

<210> 76
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<220>
<223> Zinc finger protein ZFPm1 and ZFPm2 binding site m12

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<220>
<223> Zinc finger protein ZFPm3 and ZFPm4 binding site m34

<400> 77
gccaactact acggctccct cacc 24

<210> 78
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<212> PRT
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<220>
<223> Zinc finger peptide linker

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Thr Gly Glu Lys Pro
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<210> 79
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<213> Artificial sequence

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<223> DNA binding motif

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Gln Ala Leu Gly Gly His
1 5